

Response Under 37 CFR 1.116
Expedited Procedure
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Remarks

Drawings

Attached is amended Fig. 3, in which reference signs 79 to 87 denoting the data frame to be transmitted and the blocks of the data frame have been added.

Further, as has been requested by the Examiner, Fig. 3 has been labeled as 'prior art'. However, it is respectfully requested that the Examiner reconsider and withdraw the requirement that the frame as shown in Fig. 3 be labeled "prior art".

As pointed out in the reply to the previous office action, physical layers are known which may process a frame as shown in Fig. 3. However, this does not mean that the entire frame is known. In order to process a frame, which may be e.g. extracting the data transported by the frame or transmitting the frame, a device only needs to be able to discern the data contained therein from, e.g. header parts. Accordingly, at least the data to be transmitted (ref. sign. 85 in Fig. 3) are not known from prior art. In consequence, the frame as depicted in Fig. 3 is new.

Specification

The amended Specification is submitted herewith as Replacement Pages 4, 4a, 5 & 5a.

Fig. 3 has been included in the brief description of the drawings. Further, the reference signs of Fig. 3 have been included in the amended parts of the description relating to the frame structure as depicted in Fig. 3.

Claim Objections

Regarding the claim objection raised with respect to claim 15, this claim is cancelled.

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Claim Rejections – 35 USC 103(a)

Claims 1, 5-9, 12 and 14-16 stand rejected as being unpatentable over Burns et al (Burns) in view of Julyan.

MPEP 2142 sets forth “The Legal Concept of *Prima Facie* Obviousness.”

To establish a *prima facie* case of obviousness under 35 USC 103(a) the initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done. “To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or imply suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” (MPEP 706.02(j))

The cited references do not motivate or suggest to a skilled artisan to combine these references to produce applicant’s invention as claimed.

Burns and Julyan do not combine to produce the claims in this application.

Patentability of the subject matter of claim 1 over Burns in view of Julyan:

Burns teaches a process control network comprising conventional fieldbus devices communicating via a bus 34. The conventional fieldbus devices communicate with a transmission rate of 31.25 kHz, whereas the communication rate of the bus is 1 MBit/s or 2.5 MBit/s. However, Burns contemplates connecting the conventional fieldbus devices to the high-speed bus via bridging device 30, 32 (see Fig. 1, col. 8 line 50 to col. 9 line 25).

In contrast thereto, claim 1 defines a fieldbus component comprising a physical layer which is constituted for high speed data transmission, whereby the data link layer

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operates with a fieldbus-protocol and an interface to connect these layers, all of which being implemented into and part of the fieldbus component.

On the other hand, a conventional fieldbus component used within the network disclosed in Burns cannot be connected to a high-speed bus, as, e.g., Bus 34 of Fig. 1 without a bridge device since it clearly lacks of a physical layer constituted therefore.

Accordingly, even if a skilled person would have considered to implement the physical layer of Burns with a reconciliation sublayer and a medium independent interface as taught by Julyan, he or she would not have produced the invention as defined in claim 1, as the device derived by combination of Burns and Julyan still would need a bridge device to connect to a high speed bus.

In consequence, the subject-matter of claim 1 cannot be rendered obvious over Burns and Julyan.

Patentability of the subject-matter of claim 9 over Burns in view of Julyan:

Amended claim 9 clarifies that the matching layer, the physical layer and the data link layer are implemented in the fieldbus component. Accordingly, any of the steps of receiving data coming from the data link layer, matching the data link layer to the physical layer, passing on a transmission frame to the physical layer and feeding the data to be transmitted to a high speed data transmission medium according to claim 9 are executed within the fieldbus device. However, this process cannot be derived from Burns or Julyan or a combination of their disclosures, as none of these documents teaches a fieldbus-device capable of being connected to a high-speed transmission medium due to lack of an appropriate physical layer constituted therefore.

Consequently, the subject-matter of claim 9 cannot be rendered obvious.

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Claims 3 and 12 stand rejected as being unpatentable over Burns and Julyan in view of Witkowski et al (Witkowski).

With reference to the objections raised against claims 3 and 12, neither Burns, nor Julyan or Witkowski nor a combination of these documents discloses a fieldbus-component comprising a data link layer with a MAC-layer, a basic connection layer, a peripheral data connection layer and a network management layer which operate together with a physical layer implemented into the fieldbus device and constituted for high speed data transmission. Accordingly, both a fieldbus device according to claim 3 and a communication system as defined in claim 12 are novel and inventive over Burns in view of Julyan and Witkowski.

As well, none of the documents Burns, Julyan, Witkowski discloses a fieldbus-component having a physical layer constituted according to IEEE 802.3u. Moreover, the disclosures of these documents cannot be combined in a way so as to render the subject-matter of claims 5, 14, 16 obvious. As the disclosures of Julyan and Burns already cannot be combined in a way so as to derive a fieldbus device with a physical layer adapted for high speed transmission, the disclosures also cannot be combined to obtain a physical layer constituted for Fast-Ethernet communication according to IEEE 802.3u.

Remarks on the Response to Arguments starting on page 6 of the Office Action:

It is respectfully disagreed that there would be no limitation in the claims that prohibits the use of a bridge or gateway. Although the phrase "comprising" does not exclude further elements or process steps, this phrase nevertheless unambiguously determines that the components, such as the physical layer, belong to the fieldbus component. In consequence thereof, the use of a bridge or gateway in addition to the

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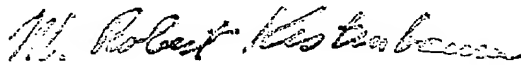
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physical layer would result in an inoperable system because the bridge or gateway in this case would be connected with its low-transmission port either to the physical layer constituted for high speed data transmission or to the high speed bus.

Wherefore consideration and allowance of the claims as further amended is respectfully requested.

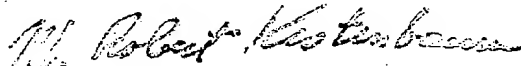
A one-month extension of time in which to respond to the outstanding Office Action is hereby requested. Credit Card Payment Form PTO-2038 is enclosed to cover the prescribed Large Entity one-month extension fee of \$110.00.

Respectfully submitted,



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I hereby certify this correspondence is being submitted to Commissioner for Patents, Washington, D.C. 20231 by facsimile transmission on September 7, 2004, fax number (703) 872-9306.



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necessary the matching layer in the fieldbus component, and the physical layer together with the interface in a separate module associated with the high speed data transmission medium.

A further aspect of the invention is directed toward a process for the transmission of data over a high speed data transmission medium to which several fieldbus components are connected.

Brief Description of the Drawings

The invention will be described in more detail hereinbelow in connection with the accompanying drawings, in which:

Fig. 1 shows a diagram of a fieldbus system with two fieldbus components connected to a high speed data transmission medium.

Fig. 2 shows a detailed sketch of a basic circuit of the fieldbus component according to the invention.

Fig. 3 shows a frame to be transmitted.

Detailed Description of Preferred Embodiments

Fig. 1 shows two fieldbus components 10 and 20, which are connected in series to a high speed data transmission medium 30 corresponding to the Fast Ethernet network technology. The connection of the fieldbus components 10, 20 to the transmission medium 30 takes place, for example, by means of a RJ-45 plug connector 40. The fieldbus components 10 and 20 have respective separate,

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identically constructed, channels of a physical layer 60 for an input lead 32 and for
an output lead 34 of the transmission medium

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30. It may be pointed out here that the leads 32 and 34 can be made bidirectional.

The physical layer 60 shown in Fig. 2 is constructed according to the IEEE 802.3u standard, and hence is known. A detailed description of the individual functional units is therefore unnecessary. For completeness, only the important functional units are named here: the medium-dependent interface 61 (Medium Dependent Interface, MDI), which produces the direct connection to the transmission medium 30. Furthermore the physical layer includes a physical, medium-dependent interface (Physical Medium Dependent, PDI) 62, a physical connection layer (PMA, Physical Medium Attachment) 63, and also a physical coding sublayer 64, which is followed by a medium-independent interface MII (Medium Independent Interface) 65. The medium-independent interface 65 produces the connection to the data link layer 70. The medium-independent interface 65 can alternatively be constituted as a Reduced Medium Independent Interface, R-MII) or as the symbol interface.

The data coming from the user of the data link layer 70 are combined into a frame 79 to be transmitted (Fig. 3), which typically consists of a preamble 80, a start limiter field 81, a frame type field 82, a frame length field 83, a header check field 84, the data field 85 proper, a data check field 86, and an end limiter field 87. Since however, as regards the fieldbus components 10 and 20, no Fast Ethernet compatible assembly is concerned, a matching layer 71 is required which matches the data frame prepared by the data link layer 70 of the fieldbus components 10, 20 to the physical layer 60 of the Fast Ethernet. These field data are furthermore

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passed on to the medium-independent interface 65 and the underlying physical
layers 64-61, and are transmitted by means of the transmission medium 30 of the
subsequent fieldbus

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